

On page 45, line 4 add "or working region" following "circumscribed region".

The terms "display screen" and "working region" have been added to the claims by various amendments and were not present in the specification as originally filed. These amendment insure that terms in the claims have a basis in the specification, in accordance with MPEP §608.01(o). No new matter is added.

Except for new claim 166, each of the added or amended claims listed below is either currently under consideration in this Application or reads on the elected species, Speech Synthesis. New claim 166 closely tracks the scope of claim 1, but is written in article of manufacture format.

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In the Claims, please add or amend as indicated:

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1. (twice amended) An apparatus for selecting a menu option from a plurality of menu options, said apparatus comprising:
 - (a) a display screen [area];
 - (b) means for at least partially delimiting a plurality of selectable regions, each of the selectable regions outside the display screen [area] and each associated respectively with a displayed menu option;
 - (c) movement related signal receiving means for receiving a movement related signal indicating successive locations with respect to the display screen [area]; and
 - (d) selection means, responsive to a first dwell event associated with a particular one of the selectable regions outside the display screen [area], the particular selectable region intersected by a plurality of the successive locations for selecting the menu option associated with the particular selectable region.
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94. (twice amended) A voice output system for a user having impaired motor control, said voice output system comprising:
 - (a) a display screen [area];
 - (b) means for completely delimiting an invisible selectable region outside the display screen [area] associated with a sequence of one or more words;
 - (c) a voice output device;
 - (d) movement related signal receiving means for receiving a movement related signal indicating successive locations with respect to the display screen [area]; and
 - (d) selection means, responsive to a quantity equalling or exceeding a predetermined
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quantity, the quantity being a function of the durations of one or more successive periods of intersection of two or more of the successive locations and the selectable region outside the display screen [area], for selecting the selectable region;

5 whereby the user may select the selectable region outside the display and speak, with the voice output device, the sequence of one or more words.

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10 104. (twice amended) The apparatus of claim 73 wherein the movement related signal is responsive to the head movement of the user; wherein each of the plurality of selectable regions is adjacent an edge of the display; wherein each of the succession of selection events includes a plurality of periods of intersection of the cursor and the intersected selectable region, each plurality of periods of intersection having a total duration equalling or exceeding a predetermined period; and wherein the control [selection] means further includes means for indicating the difference between the predetermined period and the total duration of the plurality of periods.

15 106. (twice amended) In voice output system for a user having impaired motor capability, an apparatus for selecting a menu option associated with an overshot selectable subregion on a display screen, said apparatus comprising:

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- 20 (a) a voice output device;
(b) the display screen;
(c) a menu comprising a plurality of menu options, each associated respectively with a sequence of one or more letters; and
(d) control means for:
25 (1) delimiting a plurality of selectable regions, each of the selectable regions associated respectively with one of the plurality of menu options, and each of the selectable regions including a subregion outside and adjacent the display screen and a subregion on the display screen, the subregion outside and adjacent the display screen and the subregion on the display screen adjacent one another, the plurality of the subregions on the display screen together at least partially circumscribing a region on the display screen;
30 (2) receiving a movement related signal indicating successive locations with respect to the display screen;
(3) in response to a succession of dwell events, each including an intersection of a first

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one and a second one of the successive locations and one of the subregions outside and adjacent the display screen, selecting the sequence of one or more letters associated with each of the intersected subregions, and appending the selected sequence to at least one previously selected sequence; and

- 5 (4) speaking, by means of the voice output device, the word spelled by the appended sequences.

D5 109. The apparatus of claim 98 wherein the [first] particular selectable region is invisible.

- 10 114. (once amended) A voice output system comprising:
- (a) a display screen [area] including a working region with a periphery;
- (b) a movement related signal receiver for receiving a movement related signal indicating a location with respect to the display screen [area] responsive to user movement by a user, the user movement indicating a potential user selection;
- 15 (c) a delimit device for delimiting selectable regions adjacent the periphery of the working region, each of the selectable regions selectable by the user and having an external boundary wherein the external boundary includes the side of the selectable region furthest from the working region and having either a confiner for preventing the movement related signal indicating the location from moving beyond the external boundary of the selectable region or having an activation area extending beyond the external boundary of the selectable region and beyond the display screen [area], each of the selectable regions associated respectively with and simultaneously displaying a first sequence of one or more characters, a first sequence of one or more words, or a first sequence of one or more symbols representing the first sequence of one or more words; and
- 20 (d) a voice output device for speaking the first sequence of one or more characters and/or words associated with a first particular selectable region responsive to a first intersection of the movement related signal and the first particular selectable region or the activation area associated therewith, thereby providing the user with the ability to select the first particular selectable region while overshooting the first particular selectable region or by providing a confiner to the first particular selectable region for the movement related signal.
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134. (once amended) A voice output system comprising:

- (a) a surface including a selectable region selectable by a user and associated with a sequence of one or more characters, a sequence of one or more words, or a sequence of one or more symbols representing a sequence of one or more words;
- (b) movement related signal receiving means for receiving a movement related signal indicating a first location intersecting the selectable region and, at a later time, a second location intersecting the selectable region;
- (c) an indicator for indicating in a first manner at least the difference between the time the second location occurs and the time the first location occurs; and
- (d) a voice output device for speaking the [first] sequence of one or more characters and/or words associated with the selectable region responsive to a first quantity that is a function of the difference equalling or exceeding a predetermined quantity.

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15 142. (once amended) The voice output system of claim 141 wherein the indication in the first manner includes a slight modification and the indication [modification] in the second manner includes a marked modification.

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20 147. (once amended) A voice output system comprising:

- (a) a display area including a working region with a periphery;
- (b) a movement related signal receiver for receiving a movement related signal indicating a location with respect to the display area responsive to user movement by a user, the user movement indicating a potential user selection;
- (c) a menu hierarchy including a menu comprising a plurality of menu options, a specific one of the menu options associated with a submenu comprising a plurality of submenu options, each of the submenu options associated respectively with a sequence of one or more characters, a sequence of one or more words, or a sequence of one or more symbols representing the sequence of one or more words;
- (d) a delimit device for delimiting a first and second plurality of selectable regions adjacent the periphery of the working region, each of the selectable regions selectable by the user and having an external boundary wherein the external boundary includes the side of the selectable region furthest from the working region and having either a confiner for preventing the movement related signal indicating the location from moving beyond the

5 external boundary of the selectable region or having an activation area extending beyond the external boundary of the selectable region and beyond the display area, a specific one of the first plurality of selectable regions associated with the specific menu option and each of the second plurality of selectable regions associated respectively with and simultaneously displaying one of the submenu options; and

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- 10 (e) a voice output device for speaking the particular sequence of one or more characters and/or words associated with a particular one of the second plurality of selectable regions responsive to a first intersection of the movement related signal and the specific selectable region or the activation area associated therewith and thereafter to a second intersection of the movement related signal and the particular selectable region or the activation area associated therewith, thereby providing the user with the ability to select each of the specific and the particular selectable regions while overshooting the specific or the particular selectable region or by providing a confiner to the specific or the particular selectable region for the movement related signal.

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152. (once amended) The voice output system of claim 151 wherein the sequence of characters, words, or symbols associated with one of the at least two selectable regions is more frequently [commonly] used than the sequence of characters, words, or symbols associated with another one of the at least two selectable regions; and the distance between the specific selectable region and the one of the at least two first selectable regions associated with the more frequently [commonly] used sequence is less than the distance between the specific selectable region and the another one of the at least two first selectable regions.

155. (once amended) A voice output system comprising:

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- 25 (a) a display area including a working region with a periphery;
- (b) a movement related signal receiver for receiving a movement related signal indicating a location with respect to the display area responsive to user movement by a user, the user movement indicating a potential user selection;
- (c) a delimit device for delimiting selectable regions adjacent the periphery of the working region, each of the selectable regions selectable by the user and having an external boundary wherein the external boundary includes the side of the selectable region furthest from the working region and having either a confiner for preventing the movement
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related signal indicating the location from moving beyond the external boundary of the selectable region or having an activation area extending beyond the external boundary of the selectable region and beyond the display area, each of the selectable regions associated respectively with and simultaneously displaying a sequence of one or more characters, a sequence of one or more words, or a sequence of one or more symbols representing the sequence of one or more words; and

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- (d) a voice output device for speaking the sequence of one or more characters and/or words associated with a particular selectable region responsive to a quantity equalling or exceeding a predetermined quantity, the quantity being a function of the duration of a plurality of periods of intersection of the movement related signal and the particular selectable region or the activation area associated therewith,

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thereby providing the user with the ability to select the particular selectable region while overshooting the particular selectable region or by providing a confiner to the particular selectable region for the movement related signal.

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160. (once amended) A voice output system comprising:

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- (a) a display area including a working region with a periphery;
- (b) a display device for displaying menu options on the display area, each menu option displayed adjacent the periphery of the working region, each menu option associated respectively with a user activatable switch outside the display area, the switch being positionable with respect to the location of each menu option for selection thereof, each menu option associated respectively with a sequence of one or more characters, a sequence of one or more words, or a sequence of one or more symbols representing a sequence of one or more words, for selection via the switch; and
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(c) a voice output device for speaking the sequence of one or more characters or words associated with a particular menu option, in response to the position of the switch corresponding to the particular menu option for a first time period equalling or exceeding a predetermined time period; and wherein the display device further includes an indicator for indicating at least the difference between the first time period and the predetermined time period.
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161. (once amended) A voice output system comprising:

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- (a) a display area including a working region with a periphery;
- (b) a menu hierarchy including a menu comprising a plurality of menu options, a specific one of the menu options associated with a submenu comprising a plurality of submenu options, each of the submenu options associated respectively with a sequence of one or more characters, a sequence of one or more words, or a sequence of one or more symbols representing the sequence of one or more words;
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- (c) a display device for displaying menu options and submenu options on the display area, each menu option displayed adjacent the periphery of the working region, each menu option and submenu [option] option associated with a user activatable switch outside the display area, the switch being positionable with respect to the location of each menu option or submenu option for selection thereof; and
- (d) a voice output device for speaking the particular sequence of one or more characters or words associated with a particular one of the submenu options, in response to the position of the switch corresponding to the specific menu option for a first time period equalling or exceeding a first predetermined time period and thereafter to the position of the switch corresponding to the particular menu option for a second time period equalling or exceeding a second predetermined time period.

164. In voice output system for a user having impaired motor capability, an apparatus for spelling and speaking a word, said apparatus comprising:

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- (a) a voice output device;
- (b) a plurality of sequences of one or more letters, which, when appended in a particular order, spell a word;
- (c) a display on which may be displayed a plurality of selectable regions within a polygon on the display, each selectable region adjacent a side of the polygon, the plurality of selectable regions together at least partially circumscribing a region on the display, each of the selectable regions associated respectively with and displaying on the display one of the sequences of one or more letters; and
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- (d) control means for:
- (1) receiving a movement related signal and moving a cursor within the polygon responsive to the movement related signal;
- (2) in response to a first selection event associated with an intersection of the cursor

and one of the selectable regions, first selecting the sequence associated with the intersected selectable region;

- 5 (3) in response to a succession of selection events, each associated respectively with an intersection of the cursor and one of the selectable regions, successively appending the sequence of one or more letters associated with the intersected selectable region to the first selected sequence in the particular order; and
- (4) speaking, by means of the voice output device, the word.

10 165. An apparatus for voice output comprising:

- (a) a medium readable by a general purpose computer system including a voice output device and a display screen, the display screen including a working region with a periphery; and
- (b) a program, stored on the medium and executable by the general purpose computer system, for:
- 15 (1) receiving a movement related signal indicating a location with respect to the display screen responsive to user movement by a user, the user movement indicating a potential user selection;
- (2) delimiting selectable regions adjacent the periphery of the working region, each of the selectable regions selectable by the user and having an external boundary wherein the external boundary includes the side of the selectable region furthest from the working region;
- 20 (3) either preventing the movement related signal indicating the location from moving beyond the external boundary of the selectable region or delimiting an activation area extending beyond the external boundary of the selectable region and beyond the display screen, each of the selectable regions associated respectively with and capable of simultaneously displaying a first sequence of one or more characters, a first sequence of one or more words, or a first sequence of one or more symbols representing the first sequence of one or more words; and
- 25 (4) speaking with the voice output device the first sequence of one or more characters and/or words associated with a first particular selectable region responsive to a first intersection of the movement related signal and the first particular selectable region or the activation area associated therewith, thereby providing the user with the
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ability to select the first particular selectable region while overshooting the first particular selectable region or by preventing the movement related signal from moving beyond the external boundary of the first particular selectable region.

5 166. An apparatus for selecting a menu option from a plurality of menu options, said apparatus comprising:

- (a) a medium readable by a general purpose computer system including a display screen, the display screen including a working region with a periphery; and
- (b) a program, stored on the medium and executable by the general purpose computer system, for:
- (1) at least partially delimiting a plurality of selectable regions, each of the selectable regions outside the display screen and each associated respectively with a displayed menu option;
- (2) receiving a movement related signal indicating successive locations with respect to the display screen; and
- (3) responsive to a first dwell event associated with a particular one of the selectable regions outside the display screen, the particular selectable region intersected by a plurality of the successive locations, selecting the menu option associated with the particular selectable region.

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167. The apparatus of claim 147 wherein the delimit device is further operative to delimit a shared region on the display screen, and wherein one of the first selectable regions and one of the second selectable regions each includes the shared region.

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168. The apparatus of claim 147 wherein the delimit device is further operative to delimit a plurality of shared regions, each shared region on the display screen and each associated respectively with one of the first plurality of selectable regions and with one of the second plurality of selectable regions; and wherein each of the first selectable regions and each of the second selectable regions includes the associated shared region.

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6-7 169. The apparatus of claim 114 wherein the voice output device is further responsive to a path of the user movement to the first particular selectable region or the activation area associated

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II. REQUESTS UNDER 37 C.F.R. §107(b)

5 In the Office Action, the Examiner concedes that "Baker as modified by Gunderson, Callahan and Golding does not explicitly disclose a menu option associated with a plurality of submenu." (Office Action, p. 8). The Examiner cites Atkinson for the proposition that "it is well known in the art that a menu option is associated with a plurality of submenus" (Office Action, p. 8). The Examiner however has not offered a reference providing a *suggestion to combine* Baker or any system having 10 virtual menu items with Atkinson. For the reasons discussed below in connection with claim 147, such a combination is nonobvious. "When the incentive to combine the teachings of the references is not readily apparent, it is the duty of the examiner to explain why combination of the reference teachings is proper.... Absent such reasons or incentives, the teachings of the references are not combinable." *Ex parte Skinner*, 2 U.S.P.Q. 2d 1788, 1790 (B.P.A.I. 1987). It appears that the 15 Examiner is relying upon her personal knowledge for an incentive to combine these references. Applicant requests the Examiner provide a prior art reference or affidavit under 37 C.F.R. §107(b) evidencing the required incentive to combine or withdraw the rejection.

The Examiner concedes that "[t]he combination of Baker, Gunderson, Callahan and Golding does not disclose an indicator for indicating the time difference between the cursor at a second 20 location and the cursor at a first location." (Office Action, p. 9). The Examiner however has not offered a reference providing a *suggestion to combine* Baker, Gunderson, Callahan, or Golding with Choi. For the reasons discussed below in connection with claim 134, such a combination is nonobvious. It appears that the Examiner is relying upon her personal knowledge for an incentive to combine these references. Applicant requests the Examiner provide a prior art reference or affidavit 25 under 37 C.F.R. §107(b) evidencing the required incentive to combine or withdraw the rejection.

The Examiner states that "Callahan teaches menu items can be grouping of items, time, direction, numbers, words, etc." (Office Action, p. 7). However, the cited portion of Callahan, p. 95, col. 2, lines 1-4, shows a menu labeled with words representing computer operations, e.g. logout, open, etc. Callahan does not disclose or suggest menu items as words *per se*. In the present claims, 30 words are themselves the menu items, not a representation. The words themselves are spoken. It would appear that the Examiner is using personal knowledge to support her conclusion that the prior art suggests menu items as words *per se*. Applicant requests the Examiner provide a prior art